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In re the application of Daniel V. CONRAD, et al.

Confirmation No: 6377

Serial No: 09/207,130

Group Art Unit: 3623

Filed: December 8, 1998

Examiner: Robinson Boyce, Akiba K.

For: METHOD AND SYSTEM FOR USING EMULATION OBJECTS FOR DEVELOPING POINT
OF SALE APPLICATIONS

ENCLOSURES (check all that apply)					
<input type="checkbox"/>	Amendment/Reply	<input type="checkbox"/>	Assignment and Recordation Cover Sheet	<input type="checkbox"/>	After Allowance Communication to Group
<input type="checkbox"/>	After Final	<input type="checkbox"/>	Part B-Issue Fee Transmittal	<input type="checkbox"/>	Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/>	Information disclosure statement	<input type="checkbox"/>	Letter to Draftsman	<input checked="" type="checkbox"/>	Appeal Brief (in triplicate)
<input type="checkbox"/>	Form 1449	<input type="checkbox"/>	Drawings	<input type="checkbox"/>	Status Letter
<input type="checkbox"/>	(X) Copies of References	<input type="checkbox"/>	Petition	<input checked="" type="checkbox"/>	Postcard
<input type="checkbox"/>	Extension of Time Request *	<input type="checkbox"/>	Fee Address Indication Form	<input type="checkbox"/>	Other Enclosure(s) (please identify below):
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<input type="checkbox"/>	Response to Incomplete Appln	<input type="checkbox"/>	Change of Correspondence Address		
<input type="checkbox"/>	Response to Missing Parts	*Extension of Term: Pursuant to 37 CFR 1.136, Applicant petitions the Commissioner to extend the time for response for xxxxx month(s), from to .			
<input type="checkbox"/>	Executed Declaration by Inventor(s)				

CLAIMS					
FOR	Claims Remaining After Amendment	Highest # of Claims Previously Paid For	Extra Claims	RATE	FEE
Total Claims	0	0	0	\$18.00	\$ 0.00
Independent Claims	0	0	0	\$86.00	\$ 0.00
Total Fees					\$ 0.00

METHOD OF PAYMENT	
<input checked="" type="checkbox"/>	Charge \$ 330.00 to Deposit Account No. 50-0563 (IBM Corporation) for payment of Appeal Brief filing fee.
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Attorney Name	Joseph A. Sawyer, Jr., Reg. No. 30,801
Signature	
Date	May 28, 2004

CERTIFICATE OF MAILING	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES



APPEAL NO:

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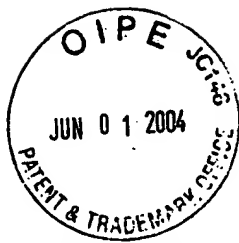
For: METHOD AND SYSTEM FOR USING EMULATION OBJECTS FOR
DEVELOPING POINT OF SALE APPLICATIONS

APPELLANT'S BRIEF

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INTERNATIONAL BUSINESS MACHINES
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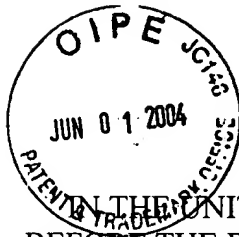
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
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Alexandria, VA 22313-1450

APPELLANT'S BRIEF ON APPEAL

Appellant herein files an Appeal Brief drafted in accordance with the provisions of 37

C.F.R. § 1.192(c) as follows:

I. REAL PARTY IN INTEREST

Appellant respectfully submits that the above-captioned application is assigned, in its entirety to International Business Machines of Armonk, New York.

II. RELATED APPEALS AND INTERFERENCES

Appellant states that, upon information and belief, he is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-15 are pending. Application Serial No. 09/207,130 (the instant application) as originally filed included claims 1-15. In an Amendment in response to an Office Action dated June 18, 2001, claim 1 was amended to correct a grammatical error. In response to the Final Office Action dated November 30, 2001, claims 1, 7, 8, 14, and 15 were amended to recite that the device being emulated is point of sale (POS) equipment. In response to a Final Office action dated October 15, 2002, claims 1, 7, 8, 14, and 15 were amended to recite that the POS application interfaces with the operating system of the development system and that the emulation module interface directly with the operating system of the development system. In response to the Office Action dated May 22, 2003, claims 1, 7, 8, 14, and 15 were amended to recite that both the POS application and the emulation module interface directly with the operating system of the development system. In response to the Final Office Action dated November 6, 2003, no amendments were made. Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 are on appeal and all applied prospective rejections concerning claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 are herein being appealed.

IV. STATUS OF AMENDMENT

The there were no proposed Amendments made in response to the Final Office Action.

V. SUMMARY OF THE INVENTION

The present invention provides an improved method, system, and computer-readable media for developing and testing point of sale (POS) applications. The method, system, and computer-readable medium provide a POS environment for developing an application on a

development system independently of a point of sale system. The application is for use with POS equipment having a device specialized for the POS equipment. The application is capable of utilizing the device when the application is executed on the POS equipment. The application interfaces with an operating system on the development system. In one aspect, the method, system, and computer-readable media include providing an emulation module that corresponds to the device. The method, system, and computer-readable media also ensure that the application will utilize the emulation module when the application is executed on the development system. The method and system also include executing the application on the development system independently of the POS system. The emulation module and the application emulate the interaction between the application and the device that occurs when the application is actually executed on the point of sale equipment. The emulation module and the application both interface directly with the operating system of the development system. In another aspect, a method for testing an application on a development system is disclosed. In this aspect, the method and system include providing an emulation object that interfaces directly with the operating system and corresponds to the device. The method further includes ensuring that the application will utilize the emulation object when the application is executed on the development system. Moreover, the emulation object and the application both interface directly with the operating system of the development system. In addition, the application is executed on the development system and it is ensured that the application adequately utilizes the emulation object. Further, the application is executed on the point of sale equipment. Thus, when the application is executed on the development system, the emulation module and the application emulate the interaction between the application and the device that occurs when the application is executed on the point of sale equipment.

Figure 3 of the present application depicts the development system 101 including an operating system 102, the application 15', and the emulation objects 110, 112 and 114. The emulation objects 110, 112, and 114 interface directly with the operating system 102, rather than replacing portions of the operating system 102.

Figures 4-6 depict embodiments of methods 150, 200, and 300 which describe operation of the system 100. In particular, the emulation objects emulate the interaction between the application 15' and the POS devices (not shown) to which the emulation objects (or modules) correspond. This emulation mimics the operation of the POS equipment without requiring that the POS device be attached to the development system 101. Specification, page 10, lines 6-18. Thus, a true picture the interaction between the conventional application 15' being developed and actual POS device can be obtained on the development system. Moreover, because the emulation objects are coupled to the operating system, rather than replacing portions of the application, the method and system in accordance with the present invention can give the developer a more accurate indication of the behavior of the application. Specification, page 11, lines 9-14 and page 14, lines 8-11. Furthermore, because the application and emulation module interface directly with the operating system, the emulation need not occur over hardware interfaces of the development system. As a result, the testing and development of the application is improved.

VI. ISSUES

The issues presented are:

(1) whether claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 are each unpatentable under 35 U.S.C. § 103 as being obvious in light of U.S. Patent No. 5,088,033 (Binkley) in view of U.S. Patent No. 5,812,668 (Weber).

VII. GROUPING OF CLAIMS

Appellant hereby states that claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 do not stand or fall together, but rather claims 1, 2, 3, 4, 5, and 6 are one group, claim 7 is a second group, claims 8, 9, 10, 11, 12, and 13 are a third group, claim 14 is a fourth group, and claim 15 is a fifth group. Therefore, Claims 1-15 constitute five (5) separate groups.

VIII. ARGUMENTS

A. Summary of the Applied Rejections

In the Final Office Action dated November 6, 2003, the Examiner rejected Claims 1-15 under 35 U.S.C. § 103 as being unpatentable over Binkley in view of Weber. In particular, the Examiner cited Binkley as providing an emulation module that interfaces directly with the operating system (Binkley, col. 3, lines 3-37 and col. 8, lines 62-68). The Examiner also relied upon Binkley for teaching that the emulation module and application both interface directly with the operating system of the development system (col. 59, lines 31-38 and 54-61). The Examiner acknowledged, however, that Binkley does not relate to a POS environment or system. Consequently, the Examiner relied upon Weber as teaching the POS environment, a POS system, or a device specialized for POS equipment. The Examiner thus concluded that the present invention as recited in varying scope in claims 1-15 is obvious in light of Binkley in view of Weber.

Appellant respectfully requests that the Board reverse the Examiner's final rejection of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 under 35 U.S.C. § 103.

B. The Cited Prior Art

The technology described in Binkley is used in developing applications for use with a target system. In particular, Binkley describes a development system that emulates a "target system." Binkley, col. 1, lines 60-62. Binkley uses a host, or development system which, in addition to a host processor, has a separate "emulating processor" that emulates the functions of the target system. The emulating processor functions as though it were the central processor of the system being emulated. Binkley, col. 6, lines 39-52. See also, Fig. 1 items 12, 14, 16, and 18 as well as Fig. 2. The host system can continue normal operation while testing applications for the target system. Binkley, col. 2, lines 25-35, col. 3, lines 3-37, and Abstract, lines 1-7. In addition, the host provides the emulation environment. Binkley, col. 6, line 66-col. 7, line 8. For example, when emulating I/O to/from the target system, the host would emulate I/O devices attached to the target system while the emulation processor would run the application being developed for the target system. Thus, the host system receives I/O signals from the emulating processor (i.e. the target system on which an application might be run), determines to which I/O devices the inputs from/to the emulating processor are directed. Binkley, col. 8, lines 60-66. The host then emulates the appropriate I/O device. Binkley, col. 8, lines 65-67. Consequently, the emulation processor emulates the target system, while the host emulates the devices. As a result, the behavior of applications on the target system can be tested by running the applications with the emulation processor and simulating the behavior of surrounding devices etc. with the host processor.

Weber describes a technology for use with a POS system. In particular, the technology described in Weber is to be used in conjunction with an active, already developed POS system. Weber, col. 61, line 15-col. 63, line 7. Weber describes a test gateway that is used with a “generic POS” system for a merchant, who owns the actual POS system. Weber, col. 61, lines 41-48. The test gateway allows the merchant to customize the merchant’s portion of the generic POS system to the production computer. Weber, col. 62, line 13-col. 63, line 8 and Fig. 50 (describing the “customization” process as including communication with the test gateway for example of a bank’s computer). Thus, an actual user of the POS equipment can customize the equipment to the user’s specific needs. However, because this relates to the actual user of the POS equipment, this customization process is performed once the point of sale has *already* been developed *and* sold to an end user. Thus, the test gateway is used in conjunction with the actual point of sale system (including the actual POS equipment) carry out operations.

C. Claims 1-15 Are Not Unpatentable Under 35 U.S.C. § 103

Appellant respectfully submits that the applied rejections of claims 1, 7, 8, 14, and 15 under 35 U.S.C. § 103 are without merit as the Examiner has completely failed to explain why Binkley in view of Weber teaches or suggests the methods, system, and computer-readable media recited in claims 1, 7, 8, 14, and 15. In particular, Binkley in view of Weber neither teaches nor suggests directly interfacing the application being developed for a POS system and the emulation module emulating a specialized device for the POS system directly with the operating system of the development system.

Appellant agrees that Binkley describes a development system used in emulating a “target system.” However, the emulating processor functions as though it were the central

processor of the system being emulated. Binkley, col. 6, lines 39-52. Consequently, Appellant respectfully submits that such a processor would run an operating system analogous to the operating system found on the actual point of sale equipment. Stated differently, in order to give a true picture of the operation of the target system and to have the emulation processor function as the central processor of the target system, the emulation processor would naturally run the operating system and other applications for the target system. The application being developed would, therefore, interface with the operating system of the emulation processor. The emulating processor's operating system and/or other preset portions of the target system would then interface with the host processor, which presumably runs its own operating system. The host processor provides the emulation environment including mimicking devices. As a result, any modules used to emulate devices would presumably interface with the host's operating system. Consequently, the application being run by the emulation processor and any software module used to emulate devices would interface with different operating systems. Stated differently, the system of Binkley uses separate host and emulation processors and Appellant has found no indication in Binkley that the software used by the host to emulate devices and the application under test run by the emulation processor interface directly with the same host operating system. Consequently, Binkley fails to teach or suggest a method, system or computer-readable medium in which both the application and emulation modules interface directly with the operating system of the development system.

Furthermore, the host processor apparently provides an emulated environment for the emulating processor using hardware interfaces of the host system. Binkley, col. 7, lines 1-4 and Figs. 1-2. In other words, the host system provides inputs and accepts outputs over hardware interfaces to mimic devices that would normally be connected to the system being emulated.

Binkley, col. 7, lines 17-62; col. 8, lines 5-30; and Fig. 3. Consequently, to the extent that Binkley teaches that the emulation occurs over the hardware interfaces, Binkley teaches away from interfacing both the emulation modules and application directly with the operating system of the host system. Consequently, Binkley does not teach or suggest a method, system or computer-readable medium in which the emulation modules are interfaced directly to an operating system which interfaces with the application being developed.

Weber fails to remedy the defects of Binkley. Weber does describe POS technology. However, as discussed above, Weber relates to the final POS system used by an end user, rather than a mechanism for testing applications being developed for use with a POS system. Appellant can find no mention in Weber of interfacing emulation modules and the application being developed directly with an operating system. Thus, if the teachings of Weber are added to Binkley, the combination might use the system of Binkley, which is generic, to develop POS applications. Thus, the emulation processor of Binkley might run POS application and the host processor might emulate the POS environment including devices that the POS system might use. However, the combination would still apparently use separate operating systems and would not use the emulation modules that are interfaced directly to an operating system which interfaces directly with the application being developed. Consequently, Binkley in view of Weber fail to teach or suggest the methods, system, and computer-readable media recited in independent claims 1, 7, 8, 14, and 15. Accordingly, Appellant respectfully submits that claims 1, 7, 8, 14, and 15 are allowable over the cited references and requests that the Board reverse the final rejection of claims 1, 7, 8, 14, and 15.

Claims 2, 3, 4, 5, and 6 depend upon independent claims 1. Claims 9, 10, 11, 12, and 13 depend upon independent claim 8. Consequently, the arguments herein apply with full force to

claims 2-6, and 9-13. Accordingly, Appellant respectfully submits that claims 2-6 and 9-13 are allowable for the same reasons discussed above with respect to claims 1 and 8 and respectfully requests that the Board reverse the final rejection of claims 2-6 and 9-13.

Accordingly Appellant respectfully requests that the Board reverse the final rejection of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 under 35 U.S.C. § 103.

Accordingly Appellant respectfully requests that the Board reverse the final rejection of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 under 35 U.S.C. § 102(e).

E. Summary of Arguments

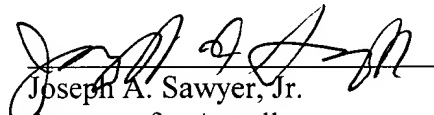
For all the foregoing reasons, it is respectfully submitted that claims 1-15 (all the claims presently in the application) are patentable for defining subject matter which would not have been obvious under 35 U.S.C. § 103 or anticipated under 35 U.S.C. § 102(e) at the time the subject matter was invented. Thus, Appellant respectfully requests that the Board reverse the rejection of all the appealed claims and find each of these claims allowable.

Note: For convenience of detachment without disturbing the integrity of the remainder of pages of this Appeal Brief, Appellant's "APPENDIX" section is contained on separate sheets following the signatory portion of this Appeal Brief.

This Brief is being submitted in triplicate, and authorization for payment of the required Brief fee is contained in the transmittal letter for this Brief. Please charge any fee that may be necessary for the continued pendency of this application to Deposit Account No. 50-0563 (IBM Corporation).

Very truly yours,

May 28, 2004


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IX. APPENDIX

1. A method for providing a point of sale environment for developing an application on a development system independently of a point of sale system, the application for use with point of sale equipment having a device, the application capable of utilizing the device when the application is executed on the point of sale equipment, the application interfacing with an operating system on the development system, the method comprising the steps of:

(a) providing an emulation module interfacing directly with the operating system and corresponding to the device;

(b) ensuring that the application will utilize the emulation module when the application is executed on the development system; and

(c) executing the application on the development system independently of the point of sale system, wherein the emulation module and the application emulate the interaction between the application and the device that occurs when the application is executed on the point of sale equipment;

wherein the emulation module and the application both interface directly with the operating system of the development system; and

wherein the device is specialized for the point of sale equipment.

2. The method of claim 1 wherein the step of providing the emulation module further includes the steps of:

(a1) providing an emulation object corresponding to the device.

3. The method of claim 2 wherein the application is platform independent and the emulation object is platform independent.

4. The method of claim 3 wherein the application is a JAVA application and the emulation object is a JAVA emulation object.

5. The method of claim 2 wherein the point of sale equipment includes a driver for controlling the device, the application interfacing with the driver when the application utilizes the device.

6. The method of claim 5 wherein the emulation object emulates the driver and the device.

7. A method for testing an application on a development system having an operating system, the application for use with point of sale equipment having a device, the application interfacing with the operating system and being capable of utilizing the device when the application is executed on the point of sale equipment, the method comprising the steps of:

(a) providing an emulation object interfacing directly with the operating system and corresponding to the device;

(b) ensuring that the application will utilize the emulation object when the application is executed on the development system;

(c) executing the application on the development system;

(d) ensuring that the application adequately utilizes the emulation object; and

(e) executing the application on the point of sale equipment;

wherein when the application is executed on the development system, the emulation module and the application emulate the interaction between the application and the device that occurs when the application is executed on the point of sale equipment;

wherein the emulation module and the application both interface directly with the operating system of the development system; and

wherein the device is specialized for the point of sale equipment.

8. A system, including an operating system, for developing an application for use with point of sale equipment having a device, the application interfacing with the operating system and capable of utilizing the device when the application is executed on the point of sale equipment, the system comprising:

an emulation module interfacing directly with the operating system and corresponding to the device; and

means for ensuring that the application will utilize the emulation module when the application is executed on the development system;

wherein when the application is executed on the system, the emulation module and the application emulate the interaction between the application and the device that occurs when the application is executed on the point of sale equipment;

wherein the emulation module and the application both interface directly with the operating system of the development system; and

wherein the device is specialized for the point of sale equipment.

9. The system of claim 8 wherein the emulation module further includes:
an emulation object corresponding to the device.
10. The system of claim 9 wherein the application is platform independent and the emulation object is platform independent.
11. The system of claim 10 wherein the application is a JAVA application and the emulation object is a JAVA emulation object.
12. The system of claim 9 wherein the point of sale equipment includes a driver for controlling the device, the application interfacing with the driver when the application utilizes the device.
13. The system of claim 12 wherein the emulation object emulates the driver and the device.
14. A computer readable medium containing at least one program for testing an application on a development system having an operating system, the application for use with point of sale equipment having a device, the application interfacing with the operating system and being capable of utilizing the device when the application is executed on the point of sale equipment, the program containing instructions for:
providing an emulation module interfacing directly with the operating system and corresponding to the device;

wherein the application is capable of utilizing the emulation module in lieu of the device when the application is executed on the development system and;

wherein when the application is executed on the development system, the emulation module and the application emulate the interaction between the application and the device that occurs when the application is executed on the point of sale equipment;

wherein the emulation module and the application both interface directly with the operating system of the development system; and

wherein the device is specialized for the point of sale equipment.

15. A computer readable medium containing at least one program for facilitating development of an application on a development system having an operating system, the application for use with point of sale equipment having a device, the application interfacing with the operating system and being capable of utilizing the device when the application is executed on the point of sale equipment, the program containing instructions for:

emulating the interaction between the application and the device using an emulation module interfacing directly with the operating system;

allowing a developer to provide input; and

providing the input to the application in a form expected from the device;

wherein the emulation module and the application both interface directly with the operating system of the development system; and

wherein the device is specialized for the point of sale equipment.